

NOTES, ABSTRACTS, AND REVIEWS

THE ART OF PLUVICULTURE

By DAVID STARR JORDAN

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It is remarkable, when we consider the varied attempts in our country to grow rich without risk or effort, that one of the most certain enterprises of this sort has been almost completely overlooked by trade schools, as well as by the Argus eyed press.

The professions of crystal gazing, clairvoyance, kleptomania, and the like, receive due attention from the press, as well as by the police, all efforts to benefit humanity by these means being everywhere discouraged. The ancient arts of astrology and horoscopy, however, have their quarter column in most of our leading papers, while the modern diversions of pluviculture, chiropractics, and hormonism are everywhere treated with respect.

Of these none can be more scientific than is pluviculture or rainmaking, as it is commonly called. Yet nowhere, so far as I have noticed, is the method of operation made clear, nor the economic laws which make it, not only valuable to the farmers, but a sure thing in general. Even the astute Father Ricard goes on with his prophecies, apparently oblivious to the work of other scientists right within the range of his storms and sunspots.

For successful rain making it is necessary to find first a region in which rain is expected but has failed to come. The first element is then to find a few hundred ranchers willing to give, let us say \$8,000 to insure a storm, worth easily let us say \$50,000 to them.

The pluviculturist has next to build a modest shack or to set up a tent for his chemical operations. Next he prepares certain chemicals in accordance with a secret formula. These may cost \$50 more or less according to the likelihood of further demands for extension of his operations. What the formula is naturally no one has explained. Let me suggest a formula of my own. Take first 10 pounds of pulverized chlorate of potash and an equal amount of granular cane sugar. Mix these carefully in a wooden tub and when ready pour over them a liter (or pint) of sulphuric acid (c. p.). This simple and inexpensive preparation will produce surprising results. These may be brilliantly enhanced by using a pound of magnesium ribbon, to one end of which a lighted match has been applied, the whole sent into the air by attachment to a sky-rocket. This is most effective towards night or after clouds begin to form. Then certain salts of strontium yielding red light, barium yielding green, and other salts yielding lights of different colors, should be set on fire. That this formula of mine has been used by any professional rain-maker, I do not know. I am sure that any pharmacist might furnish something equally good. Some also use an old-fashioned fanning mill to condense the air, but that is less impressive.

Now that the chemistry has been provided for, the most important point follows—the economics of the process. There is an international institution known as "Lloyds" which insures anybody against anything, after a study statistical or meteorological of the chances. It charges a modest premium which naturally varies with the probabilities. If you want a clear day for a picnic or a football game, Lloyds will for a consideration insure you against rain. Lloyds do not control the weather, but while losing the premium charged you will receive enough to finance your pleasure or your sport next time. You can insure a baseball player against striking out, or an airship from falling into the sea, in accordance with scientifically accepted probabilities. Every well-regulated stadium or other center of culture is a client of Lloyds.

Now let the rain maker insure himself against a rainless day. I do not know the premium which Lloyds would charge. In California it would vary, being relatively low in March, especially in the north, rising higher to 100 per cent, or even more in July.

Let us suppose that a dry period should occur in March, the month of all months when rain is most desired in Coarse Gold, let us say, in Alcalde, and in Calexico. Let us take a high estimate, assuming that the premium charged is \$2,000, on amount of insurance in case of a dry day being \$8,000. The balance sheet of rain making is shown below:

| | |
|--|----------|
| A. In case of rain— | |
| Received from the people of Alcalde..... | \$8, 000 |
| Paid for chemicals and housing..... | 50 |
| Paid for premium to Lloyds..... | 2, 000 |
| Balance of profit..... | 5, 950 |

| | |
|-------------------------------------|----------|
| B. In case of no rain— | |
| Received from Lloyds..... | \$8, 000 |
| Paid for chemicals and housing..... | 50 |
| Paid for premium to Lloyds..... | 2, 000 |
| Balance of profit..... | 5, 950 |

C. In A, case of rain—
The people of Alcalde pay \$8,000, and receive rain worth \$50,000.

D. In B, case of no rain—
The people of Alcalde pay out nothing and receive nothing. They are then ready to try again. The transaction thus involves therefore no loss to anyone except to Lloyds in case of B. And this great corporation knows how to recuperate elsewhere. But under A, of course, the people of Alcalde would have had their rain anyhow.

There is one element of risk. Once in San Diego County and once again in Fresno County the rain came as a desolating deluge, doing much damage and relatively very little good. It is said that under these conditions the cautious pluviculturist saw fit to take no chances and never collected his fee.

It was Barnum, was it not, who stated the lesson to be drawn: "A sucker is born every hour." Herbert Spencer insisted that "to save men from the consequences of their folly would fill the world with fools."

For this reason perhaps the press discourages crystal gazings and applauds the pluviculturist.

THE FLOODING OF A PASTURE BY HAIL

Many remarkable results of hailstorms have been noted in this REVIEW, but perhaps none more remarkable than that reported by Mr. Edwin T. Larsen, official in charge of the Weather Bureau Office at Charles City, Iowa. Three photographs, which, unfortunately, are not clear enough to warrant reproduction, show the extraordinary magnitude of the deposit.

These pictures were taken on the day following a severe hailstorm which occurred in southern Floyd County, Iowa, on June 11, 1925. The fall of hail was heaviest over the drainage area of a creek, known as Bloody Run, which enters the Cedar River 3 miles southeast of Charles City, Iowa. This creek bed is normally dry, but during the storm it carried a stream 20 feet deep and 100 yards wide. The hail, which was stated by the residents of the storm area to have fallen to a depth of 2 to 4 inches, was washed from the adjoining fields into the creek by a torrential fall of rain. The pictures were taken at a turn of the creek where the hail was carried out of the creek bed and deposited in an adjoining pasture, where a woven wire fence assisted in holding the hail until the water subsided. About 1½ acres were covered with hail to a depth of from 2 to 4 feet. The total precipitation during the storm can only be conjectured, but it was evidently considerably heavier than at the Charles City station, where 1.76 inches occurred, of which 1.60 inches fell in 50 minutes. Only a light fall of hail occurred at the station. The hailstones were said to have approximated hen's eggs or golf balls in size, and at the time the pictures were taken hail up to 2 inches in diameter could be readily found in the drift.

HAILSTORM OF SUNDAY AFTERNOON, MAY 24, 1925, AT BALTIMORE, MD.

By J. H. SPENCER

[Weather Bureau, Baltimore, Md.]

Following the hottest weather ever recorded at Baltimore in May (maximum temperature, 98°, at 3:30 p. m., 23d), the weather continued warm during that night, with a minimum temperature of 69°; then the temperature rose rapidly on the 24th to a maximum of 87° at 11:30 a. m. This was followed by a slight fall to 83° between 11:30 a. m. and 1:30 p. m., and at 1:30 p. m. a cool wave from Ontario struck Baltimore. Beginning at that hour the temperature fell 16° in about 10 minutes and 8° farther (a total of 24°) by 4:35 p. m., when the fall